



# Traumatic Brain Injury: Prevalence, Disability & Services

Kyle Muus, PhD, Dmitri Poltavski, MA & Ronald Park, MA, UND Center for Rural Health



## ? Traumatic Brain Injury (TBI)

→ rapid acceleration & deceleration, including tearing of nerve fibers, bruising of the brain tissue, brain stem injuries and swelling; or, when an external physical force hits the brain, producing an altered state of consciousness, resulting in impaired cognitive abilities, physical/behavioral/emotional functioning, language and/or memory (CDC, 1999)

? Each year, 1 million persons with TBI are treated and released in hospital emergency rooms

? An additional 50,000 TBI victims die and another 80,000 are disabled each year

? About 5.3 million Americans, a little more than 2% of the U.S. population, currently live with TBI disabilities (CDC, 1999)

? The Brain Injury Association (2002) estimates hospital and fatal injury costs relating to TBI in the US exceed \$48 billion annually

? The leading causes of TBI are motor vehicle crashes, violence (e.g., firearms) and falls (particularly among elders)

? TBI risk in men is twice the risk in women

? The risk is higher in adolescents, young adults and persons aged 75 years or older

## Rural Issues

? Rural residents with TBI have many unique problems as they transition from urban-based rehabilitation services to their local health & rehab services

? Rural families may find it especially challenging to adjust to newly-acquired and permanent changes in a family member's cognitive, behavioral and emotional functioning



*"If a disease was killing our children in the proportions that injuries are, people would be outraged and demand that this killer be stopped."*

C. Everett Koop, MD, 1990  
Former Surgeon General

## Brain Injury

**Congenital and Perinatal**  
(no period of normal development)

**Acquired**  
(following a period of normal development)

**Perinatal**  
(e.g., birth stroke)

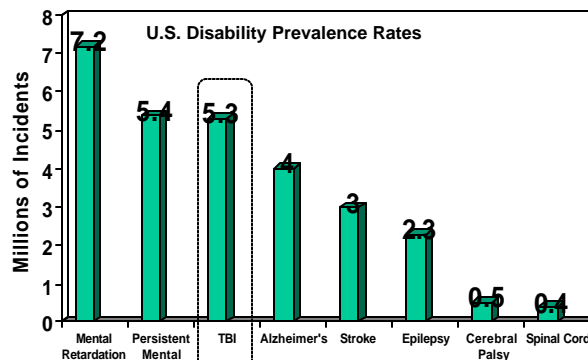
**Congenital**  
(e.g., PKU)

**Non-traumatic**  
(internal occurrence  
e.g., tumor)

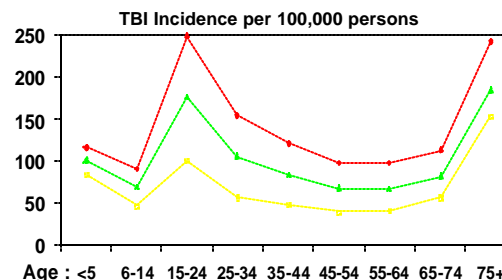
**Traumatic**  
(external physical force)

**Open**  
(e.g., gunshot)

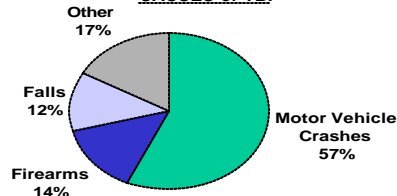
**Closed**  
(e.g., fall)



Source: Brain Injury Association of America, 1999



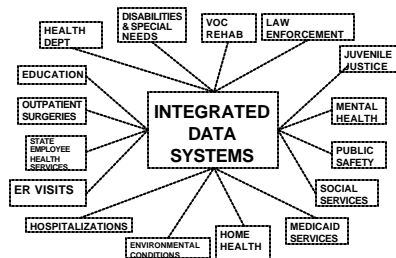
## CAUSES of TBI



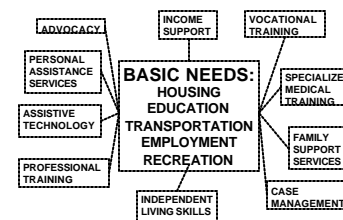
**Estimate of TBI-Disabled Persons in ND: 12,844**

\*Based on National prevalence estimate of 2%

## AN ENVISIONED METHOD FOR IMPROVING SERVICES COORDINATION FOR NORTH DAKOTANS WITH TBI



## PRIORITIZED SERVICES FOR PERSONS WITH PHYSICAL, COGNITIVE & SENSORY IMPAIRMENT



? Large gaps in health care and services exist in rural areas, and rural persons are less likely to be insured than urban residents

? Insufficient public transportation and poor access to professionals with expertise in TBI rehab may impede a rural TBI survivor's ability to become functionally independent

? Isolation is a barrier to understanding the real impact of TBI on rural residents

? Rural health care providers are in chronic short supply and TBI frequently goes undocumented and untreated

? Rural victims of domestic violence/abuse who incur TBI may not seek treatment out of concern for maintaining confidentiality

? Studies suggest substance abuse is a risk factor for TBI. Given the relatively high rates of drug/alcohol use among rural youth, this is a significant issue for rural rehabilitation & recovery

## Federal Grant Submission

? In ND, there is a TBI grant planning committee that includes representation from a variety of state agencies, including: North Dakota Department of Human Services; North Dakota Department of Health; Open Door Center; UND School of Medicine & Health Sciences.

? Committee's purpose: Develop a grant proposal to seek funding for (a) conducting a statewide TBI needs assessment and (b) improving coordination of services (health, social, rehabilitation, etc.) for persons with TBI and their families.

? In 2002, a grant proposal was submitted to the federal Maternal Child Health Bureau (funding decision is pending).

## Continued Challenges

Increased/Improved Efforts Toward

? Public Education

? Prevention

? Surveillance & Epidemiology

? Research on Impact of Health Care & Rehab on Patient Outcomes

? Access and Coordination of Services